

Entire length 5.00, culmen 0.50; wing, carpus to tip, 2.80; tail 2.00, tarsus 0.85, hind toe 0.25.

Hab. Accra.

The description is taken from three specimens shot close to Accra by Mr. T. E. Buckley and myself. In this part of the country it is by no means uncommon. We always met with it singly or in pairs on the sandy plain, which is much interspersed with bushes; it was never observed to mount in the air, but flew rather in a Pipit-like manner for a short distance when disturbed. A fourth specimen, in Mr. Sharpe's collection, was killed at Accra in May.

XIX.—*Notes on the Ornithology of Sardinia.*

By A. B. BROOKE, F.Z.S.

HAVING paid four visits to the Island of Sardinia, during which I devoted much attention to its ornithology, I am in hopes the following remarks, based almost entirely upon personal observation, may prove of some interest. My visits, which extended over the greater part of the months March, April, May, June, November, and December, of the years 1869, 1871, and 1872, were exclusively confined to the south-west corner of Sardinia, which contains an area of about one sixth of the whole island, and is isolated from the remaining portion by the large flat plain which runs in a north-westerly direction from Cagliari to Oristano, a distance of nearly seventy miles. This plain, which has an average breadth of from seven to ten miles, remaining, as it does, in a great degree uncultivated, owing to its excessive unhealthiness, forms a marked feature in the physical geography of the island, with which are connected, as can be easily imagined, many zoological facts of considerable interest. In the uncultivated parts it is covered with a dense undergrowth, four or five feet in height, composed principally of cistus, myrtle, privet, heather, and lentiscus. In this sea of cover are found the haunts of very many of the smaller Warblers, the harsh grating call-notes of *Melizophilus sardus*, *Curruca melanocephala*, and *Sylvia conspicillata* becoming in early summer mornings, if

possible, tedious from their incessant repetition. It is also here that *Otis tetrax*, the only Bustard as yet discovered in Sardinia, finds a congenial home, its unrelaxing watchfulness and wildness rendering it a task of some difficulty to secure specimens in such a stronghold. In winter the plain is the favourite hunting-ground of many of the Raptores,—hares, rabbits, Partridges, and the dead or sickly individuals of large flocks of sheep and goats (which are fed there during that season) affording them constant food. To the north and south of the plain the mountains rise gradually, those on the north forming the high chain of the Geimargentu, those on the south the less elevated range of Monte Limas. The scenery of the latter range is wild and picturesque to an extreme, possessing a character peculiar to itself. The lower slopes of the mountains are covered with forests of ilex, and cork trees of vast age and growth. These decrease in size as a higher elevation is attained, becoming dwarfed and stunted into mere pigmy shrubs, which frequently present the most eccentric shapes, their irregular arms being covered with long pendent moss. In some instances the summits of the mountains, which reach 4000 feet, are overgrown with forest continuous with that which clothes the valleys and slopes; but more generally they are bare, rounded in form, and covered with grass and herbs, which possess a considerable aromatic fragrance. The valley of Monte Marno intersects the Monte Limas range, dividing it into two very nearly equal parts. Immediately to the north of this valley the mountains are broken up into thousands of jagged pinnacles, varying in height from 100 to 500, or perhaps 1000 feet, which jut up bare and naked from the rich forests surrounding their bases. These form the last refuge of the Mouflon in this range; and I trust that for some years to come the species may, amongst these in many places impracticable fastnesses, defy extinction. In the lower forests are found very diminutive races of the Wild Boar and Red Deer, the same law which I shall have occasion to allude to as affecting the avifauna of the island having apparently laid its mark upon the larger mammalia with still clearer impress.

Round Cagliari and Oristano lie numerous large brackish lagoons, of which Scaffa and Quarto, at Cagliari, and S. Giusto, at Oristano, are the most important. These, in winter, are the haunts of large flocks of Flamingos and innumerable Ducks and Waders of different species. My time, however, was, I regret to say, too short to do justice to either of these most interesting localities. At Cagliari there is a good local museum containing a very fair collection of the birds of the island. It is, however, nearly useless, being in miserable disorder, and only open for a few hours twice a week; and although I several times asked permission to remain a little longer, or to have the cases opened, I was never allowed to do so.

In order to make these notes as easy of reference and as perfect as possible, I have in a large measure adopted the nomenclature of Professor Blasius in his 'List of the Birds of Europe,' and have, where my own experience fails me, borrowed information from Count Salvadori's excellent list of the birds of Sardinia, published in vol. vi. "*degli Atti della Società Italiana di Scienze Naturali*," in 1864, and also from Signor Gaetano Cara's older work, '*Ornithologia Sarda*,' published in 1842—the only other treatise connected with the subject with which I am acquainted being Cetti's ancient work published at Sassari in 1766.

My best thanks are due to Mr. R. B. Sharpe for the kind trouble he has taken in advising me with respect to many points which I have submitted to his consideration, and also to Signor Gaetano Cara, of Cagliari, for the courteous kindness shown to me by him during my stay there.

1. GYPS FULVUS.

This Vulture is by no means uncommon, is resident, and breeds in the island. Their appearance, however, in some localities is uncertain, many days passing without one being seen. In Sardinia they are far from bold, but are extremely shy and suspicious; and I have frequently seen them refuse to be attracted by the most tempting pieces of meat, after having soared round once or twice, and failed to satisfy them-

selves of the perfect safety of the locality. The greatest number I ever recollect having seen together was on one occasion near Oristano, when I counted about eighty soaring over a dead carcass. For a long time previously I had been watching them floating in from all quarters, at a great height, with marvellous rapidity. Both this and the following species seem to have a habit of resorting, night after night, to the same place to roost. One of these roosting-spots I visited. It was on the top of a bare tolerably isolated hill, between 3000 and 4000 feet in height. The highest point was composed of a cluster of precipitous rocks, with a few old stunted ilices growing along their face. Both in the rocks and trees there were evident signs of large numbers of Vultures resorting to this place to roost; and the goatherd who accompanied me told me he had frequently seen as many as thirty or forty fly out whilst passing with his goats early in the morning. On that occasion I remained till after dark, but only one bird came; this, no doubt, was on account of my visit being during the breeding-season, when the old birds were busy attending on their young, and the cock bird was probably roosting in the vicinity of the nest.

2. VULTUR MONACHUS.

This species is, I think, the commonest Vulture in Sardinia, one or more of these magnificent birds being constantly in sight, floating round at various heights, often looking like a mere dot against the sky. A nest I found, as late as the 1st of June, was built high up in the mountains, on the very top of an old stunted illex, forming a large shallow platform, about 5 feet long by 4 broad. It was roughly composed of dried sticks of considerable size, and lined with a little goat's-hair; most of the latter, however, was probably the remnants of the food brought to feed their young. Numerous leg-bones &c. lying about testified to the ample manner in which this had been effected. There was only one young bird in the nest, covered with a very dark brown down; the primaries and tail-feathers, just beginning to show, were nearly quite black; its legs, which were very large in proportion to its body, were a

dirty white faintly tinged with pale lemon-colour. There were two or three other nests close by, from which the young birds had flown, suggesting the idea that this species is in the habit of nesting in small parties. The nests can be easily seen from a long distance by ascending the mountains, as on looking down over the forests they appear like large flat platforms, always being placed on the very summits of the trees. The rapidity with which these birds can devour the remains of a dead sheep or bullock is extraordinary. On one occasion I had placed the skinned carcass of a moderate-sized sheep in an open vineyard surrounded by thick cover, in hopes of attracting some birds of prey. I had sat by it for several hours without any thing having perceived it, and, getting tired of waiting, moved away 200 or 300 yards. I had scarcely done so when a common Kite (*Milvus ictinus*), flying by, caught sight of the meat, and, after soaring round once or twice, lit; he was hardly down when a Cinereous Vulture appeared at a great height, rapidly descending in circles, which became smaller and smaller as he neared the ground; he was followed in quick succession by two Ravens, another Kite, another Cinereous Vulture, and an Eagle (*Aquila bonellii*, I think), which latter, however, did not light, but kept soaring round and round. In the mean time I stalked to the spot as quickly as possible, and managed to kill a Vulture, and then, to my surprise, on looking at the sheep, found literally nothing left but the clean-picked ribs, backbone, and head. I feel quite sure that I am over the mark when I say six or seven minutes was the outside limit of the time the Vultures were on the ground, and one bird not more than half that time. The one I shot was a fine old female, weighing $16\frac{1}{4}$ lbs.; the weight of a male I afterwards shot was only 15 lbs.; the length of the female in the flesh was 41 inches, from carpal joint to end of wing 30 inches. Vultures do not appear to begin to hunt very early in the morning, but wait until the sun is well up; and few are to be seen during the extreme heat of the day, which seems to show that they rest at that time. Their power of going without food must be very great, as it is improbable that a comparatively small island like Sardinia supplies enough

dead carcasses to give each bird a meal every day. These birds hunt over an enormous extent of country; the pace with which they soar through the air, when going from one point to another, can only be realized from the inconceivable rapidity with which they pass out of sight on a clear day when flying at great heights.

3. GYPAETUS BARBATUS.

This noble bird is decidedly common, a pair being in possession of every separate range of hills, which they appear to regard as their own territory, and from which they are seldom to be found far distant. They are generally seen single or in pairs; but now and then I have observed three, and on one occasion four, together. As a rule they are most decidedly mountain-birds; but occasionally a single bird may be seen hunting over the plains and cultivated lands, not flying more than 100 yards high. The nest of one found on the 18th of April, was built on a broad ledge of a precipitous cliff about 300 feet high, within 20 feet of the top, and was completely sheltered from the severity of the weather by a large overhanging piece of rock. After some trouble I discovered a way by which, with a little care, I managed to get on to the ledge, much to the discomfort of the solitary inmate, a young nestling, covered as yet with a pale yellowish brown down (figured in 'Birds of Europe,' Sharpe and Dresser, part 15). The nest itself was an accumulation of dried sticks with a cup-shaped hollow in the middle, and had evidently been used for years. In it, and on the surrounding ledge, were great quantities of the leg-bones and feet of goats &c., and a part of a fox's lower jaw; these being in all stages of putrefaction, the smell was abominable. The old female, on my first visit to the nest, sat extremely close, and, although I was standing over her within 7 or 8 yards, would not leave her young until I fired a shot, upon which she dashed off, dropping almost perpendicularly, and was out of range before I could fire. She flew over the valley and lit on a high projecting rocky pinnacle, upon which I could see her through the telescope, sitting quietly watching all my proceedings.

She returned to the nest shortly afterwards, on my having retired to a little distance. Wishing to secure a specimen, I managed to obtain a difficult but unsuccessful shot as she repeated the same manœuvre. The male bird was in sight when I first found the nest, but disappeared almost immediately, and did not return.

4. *AQUILA CHRYSÆTUS*

is the commonest Eagle in the island. A nest found on the 21st of April was built on a grassy ledge of a small precipice, and contained two eggs. One was addled; but the other was just beginning to chip; so I took it home and had it hatched under a hen; but unfortunately the young bird died in less than a week, from having been overfed during my absence. The weight of the old female, which I shot, was 11 lb. 9 oz.; her crop was full of mutton in a high state of decomposition.

5. *AQUILA BONELLII*.

Common. I have seen these birds repeatedly hunting over the plain and round the "stagnos" of Oristano. They are also abundant in the mountains.

6. *HALIAETUS ALBICILLA*.

I never met with this bird myself; but it is mentioned in both Cara's and Salvadori's catalogues, the latter having seen one near Cagliari. I found what I took to be a nest of this species on the island of Vacca, off the S.W. corner of Sardinia; it was very large, and built on the point of a precipice immediately overhanging the sea. This was on the 5th of May; and the young birds had flown.

7. *PANDION HALIAETUS*

is stated not to be uncommon along the sea-shore. I saw none during the winter. The nest above mentioned might have belonged to this species.

8. *CIRCAETUS GALLICUS*.

These birds seem to be rare on the island, only visiting it during their migration; and I cannot find any mention of their having been discovered breeding. I saw one on the 8th of

April near Villacidro, flapping slowly and heavily over the ground, not more than 100 yards off; and afterwards I saw two more in the vicinity of St. Antioco, but never met with it elsewhere. This Eagle is generally one of the first summer migrants to appear at Genoa; and some years they pass over this place in very considerable numbers, arriving as early as the end of March.

9. *BUTEO LAGOPUS*.

There is one specimen of this bird, stuffed, in the museum at Cagliari, which Cara mentions as having been killed near Iglesias in the winter of 1834.

10. *BUTEO VULGARIS*.

Very common, breeding in the large forests. I was greatly struck with the small size of all the Sardinian Buzzards I saw, both alive and dead, compared with continental ones. The measurements of a male taken in the flesh, killed on the 8th of March, were as follows:—Length 18·5, wing 13·7, tarsus 3·3, culmen 1·1. Their chief food in Sardinia consists of lizards, beetles, &c., occasionally varied with young rabbits. Once I remember seeing one of these birds hovering for a considerable time, head to wind, like a common Kestrel.

11. *MILVUS ICTINUS*.

Very common. A pair in the habit of regularly hunting round Villacidro were the terror of all the old fowl-women in the town, and, in spite of every precaution, frequently proved too quick for them, and carried off chickens from before their very door.

12. *MILVUS MIGRANS*.

There is one specimen, stuffed, in the museum at Cagliari, which I was assured positively by Signor Cara had been killed in the island. I myself, however, neither procured nor saw this bird in a state of nature.

13. *FALCO PEREGRINUS*.

Very common, breeding in the inland cliffs and along the sea-coast, in both of which localities I have seen their nests. These birds struck me as being very much smaller than continental ones.

Since writing the above, my friend, Mr. R. B. Sharpe, has communicated to me his opinion that the specimens procured by me in Sardinia are distinct from the Peregrine Falcon of continental Europe, and has done me the honour to name the species after me (Ann. & Mag. Nat. Hist. January 1873, p. 21).

14. FALCO SAKER.

There is an immature Falcon in the museum at Cagliari, which Salvadori, in a note at the end of his list, refers to this species. It was killed on the banks of the "stagno" of St. Gilla in February 1842; and Cara mentions having received two other specimens. I was not able to satisfy myself with respect to this bird, owing to the careful manner (before mentioned) in which all the cases in the museum were kept locked, and the specimens stowed one behind the other in inextricable confusion.

15. FALCO BARBARUS.

I shot a pair of these Falcons on the island of Vacca, on the 5th of May 1871. They were immature birds, male and female, and had a peculiar worn and faded look, caused, I think, by bad health, as on opening them I found a number of some species of entozoon in their stomachs, which I see was also the case with two Barbary Falcons shot by Mr. Salvin in the Atlas Mountains (Ibis, 1859, p. 184). At the time I took them for a pair of young unhealthy Peregrines, but afterwards, being puzzled by them, showed them, amongst others, to Messrs. J. H. Gurney, Gould, &c., who agreed in considering them the true *F. barbarus*.

The measurements of my birds do not agree entirely with those given by Mr. Salvin, the female being $15\frac{1}{2}$ inches in length, and the male 15, whereas his birds measured respectively $13\frac{1}{2}$ and 13 inches. In length of wings they agree with Mr. Salvin's bird, the Sardinian specimens thus appearing *much shorter-winged birds* in proportion to their length*.

* [The difference is more apparent than real, the total lengths in our specimens having been taken from the skins.—ED.]

16. FALCO ELEONORÆ.

"Toro" and "Vacca," two barren uninhabited twin rocks, rising precipitously out of the sea, off the S.W. corner of Sardinia, form perhaps the principal headquarters of these beautiful Falcons in the Mediterranean. Vacca (which I visited) lies eight miles from the Sardinian coast, and two miles south of the small thinly inhabited island of "St. Antioco." Its length is about a quarter of a mile, its breadth not quite so much. "Toro" is, I believe, rather the larger island of the two, and is situated seven or eight miles further south. Owing to the extreme difficulty of landing, except in the calmest weather, these islands are seldom visited, and then only by fishermen, who occasionally land to dry their nets.

The precipitous cliffs of "Vacca," especially those on the east side of the rock, are the favourite haunts of the Eleonora Falcon; and here they pass the entire year and breed. It was early in May when I explored these cliffs; and although this Falcon is not supposed to breed until much later in the year, yet I feel almost certain that they were nesting at the time of my visit. If this be not so, I do not know how to account for the large number of birds (about twenty or twenty-five pairs) that I found continually on the rock during the day-time persistently returning and flying into the same holes, and that after having been fired at, *and wounded*, as was the case with several individuals. The manner also in which they flew in circles, screaming over my head, exhibited a similar annoyance to that displayed by Peregrines when their nest is disturbed. I also fancied several times that I heard the young birds squealing in their nests. I tried unsuccessfully to make this certain by reaching the breeding-holes, but found that it was absolutely impossible without the ropes and tackle necessary for such an undertaking. On the top of the cliffs I found numerous chosen places where the Falcons picked their prey previously to carrying it to their young. The remnants consisted solely of the remains of Insessores, which must have been obtained on the opposite shores of Sardinia, as the only species observed by me on Vacca was the common Wheatear (*S. ænanthe*), of which I

saw a solitary pair. The stomachs of all the Eleonora Falcons examined by me (four in number) also contained the remains of small birds. Two old males that I obtained were in their beautiful adult dark slaty-blue plumage. A third, a young male, probably of the previous year, differed from adult females in the much darker colour of its breast, and also in the colour of its feet, which were of a decided orange-yellow, instead of the pale yellow faintly tinged with green characteristic of the old female bird. The wings of the four specimens, as they lay before me in the flesh, reached almost exactly level with the end of their tails, not extending beyond.

17. *FALCO SUBBUTEO*.

I only once saw this bird, in April, hawking high in the air for flies &c. over a nearly dried-up river-course. I think it is merely a bird of passage.

18. *FALCO VESPERTINUS*.

Passes annually in spring.

19. *FALCO ÆSALON*.

A winter visitor, during which season it is not uncommon.

20. *FALCO CENCHRIS*.

I found a pair of these birds breeding in the high rocks behind Villacidro in company with great numbers of the common Kestrel during the month of May. They are not common, and this is the only occasion on which I observed them. They are very easily distinguished from *F. tinnunculus* by their cry, which is quite different, being much shorter, consisting of only three notes. In the stomach of a male I found the remains of a lizard and several grasshoppers.

Canon Tristram informs me he observed a few pairs breeding on the south-east coast in 1856.

21. *FALCO TINNUNCULUS*.

Extremely common all the year round. Their principal food during the summer is locusts; and I have watched them flying into their nests, eight and ten at a time, each bird holding a locust in its claws. The amount of good they must do in thus helping to lessen one of the greatest curses of the island

is incalculable. They are also very fond of lizards; and the crop of one which I killed in March was crammed with their remains, both large and small.

22. *ASTUR PALUMBARIUS*.

Very common. One day, when stalking Moufflon, I came suddenly upon an old female in a wild rocky gorge, engaged picking a Woodpigeon she had just killed; instead of leaving it, as I expected, she gave one look of defiance over her shoulder, seized it in her claws, and dashed off down the mountain, gliding and steering her way through the thick forest in the most marvellous manner. Another, a young male, which I shot, was on the point of taking a three-quarter-grown rabbit. This bird had the remains of a Short-toed Lark (*Calandrellabrachydactyla*) in his stomach. Two males weighed respectively 1 lb. 6 oz. and 1 lb. 4 oz. I mention these apparently insignificant details, as I believe that all facts tending to show that *permanent* differentiation of form that has been effected by isolation consequent upon an island life (even though that differentiation consists in many instances in a large change as to size accompanied by but slight changes of coloration) may lead, if carefully recorded and followed out, to fresh light being thrown upon some questions of the highest zoological interest.

23. *ACCIPITER NISUS*.

Not very common, and I have only observed them during the winter.

24. *CIRCUS ÆRUGINOSUS*.

Very common about the plain; and round the neighbourhood of Oristano these Harriers swarm. A nest I found in the end of April was built in the middle of a reedy marshy lake, placed halfway up the stems of the reeds, just clear of the water; the bottom was formed of rough coarse sticks, and the interior of dried matted rushes, in some cases with their roots attached, the egg lying carelessly in the middle. Out of all the numbers that passed under my notice, I never observed any, excepting in the dark brown plumage with the

yellow head, a few showing buff markings, more or less, on the scapulars &c.

25. *CIRCUS CYANEUS*.

During the winter Hen-Harriers are tolerably common about the plains and "stagnos;" but I never remember seeing them in the summer, and I think few, if any, remain at that season.

26. *CIRCUS CINERACEUS*.

There are two specimens in the museum at Cagliari, an adult and an immature bird.

27. *CARINE NOCTUA*.

Common all the year round. The Little Owl seems to inhabit mountains and plain alike, on the former frequenting the rocks, on the latter the old stunted ilex, cork trees, &c.

28. *SCOPS GIU*.

A few remain all the year round; but their numbers are considerably increased during the summer. I have seen specimens killed near Oristano early in March. They are very common in the oak forests in the mountains; and their monotonous cry is to be heard on a still night from all quarters. A pair took up their abode in the old deserted bishop's palace at Villacidro, and used to issue forth every evening at dusk, from which time their note could be heard uninterruptedly all the night through.

29. *ASIO OTUS*.

Not common. There are two specimens in the museum at Cagliari.

+ 30. *ASIO ACCIPITRINUS*.

There are several specimens in the museum. Salvadori found them not uncommon in January in the salt-works near Cagliari.

31. *ALUCO FLAMMEUS*.

Common all the year round.

[To be continued.]